



Touchmonitors

Product Catalog



January 1999

About Elo TouchSystems

Founded in 1971, Elo TouchSystems is the company that pioneered touchscreen technology, a technology that simplifies how people interact with computers. Elo's products include two different touchscreen product lines with controllers and software drivers, touchmonitors, signature capture devices, and a Web browser overlay for converting Web sites to kiosk applications.

Since 1986, Elo has been a wholly owned subsidiary of Raychem Corporation, one of the world's leading materials science companies. Raychem has been creating innovative solutions for a wide range of business environments since it was founded in 1957. Elo employs more than 500 employees worldwide in Fremont, California; Kessel-Lo, Belgium; and Ottobrunn, Germany. In addition, a joint-venture partner, Touch Panel Systems, has headquarters and sales offices in Tokyo, with manufacturing and R&D facilities in Osaka, Japan.

Fremont (California), USA

Elo TouchSystems' newest facility, in Fremont, California, serves as the company's headquarters, R&D center, and main manufacturing site.



Kessel-Lo (Louvain), Belgium

Elo's facility in Belgium resides on the site of Raychem NV, which is the Belgium site of Raychem Corporation, Elo's parent company. Raychem NV was founded in 1969 and now employs nearly 900 people and occupies over 47,000 square meters in Kessel-Lo, just outside Leuven (Louvain), which is 25 kilometers east of Brussels.

Ottobrunn (Munich), Germany

In January, 1998, Elo moved its facilities in Germany onto the site of Raychem GmbH, which is the German site of Raychem Corporation, Elo's parent company. Situated south of Munich in Ottobrunn, Raychem GmbH was founded in 1964. It now employs more than 500 people and occupies 39,000 square meters of production and office space.



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Note: Some products are not available in Europe.

We are continuously expanding our range of touchmonitors. Please ask for the latest information!

IntelliTouch Surface Wave Technology

IntelliTouch products— for self-service applications

- Point-of-information kiosks
- Electronic catalogs
- Gaming, lottery, and amusement
- Multimedia marketing
- Banking/financial transactions
- Ticket sales
- Public pay phones
- Industrial control rooms
- Computer-based training

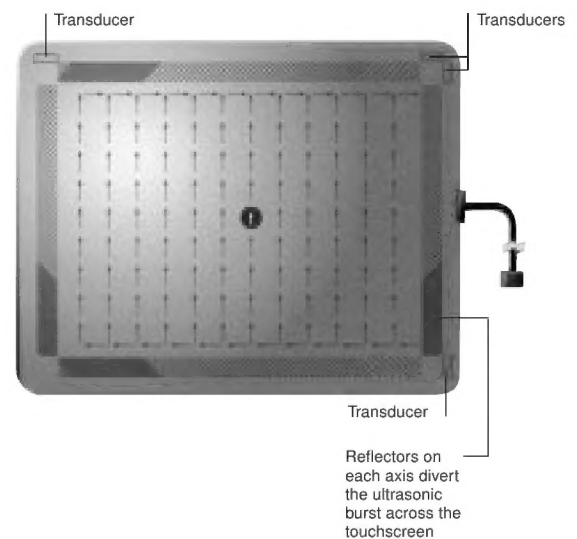
IntelliTouch benefits

- Surface wave technology
- Pure-glass touchscreens for superior image clarity, resolution, and light transmission
- Durable, scratch-resistant glass surface— continues to work if scratched
- Stable, “drift-free” operation— for touch response that’s always accurate
- Smart touch response— no false touches
- Finger, gloved-hand, and soft-stylus activation
- Fast touch response
- Flat, spherical, and cylindrical touchscreen options for design flexibility
- Antiglare-glass option
- SecureTouch option on fully tempered glass

IntelliTouch

The IntelliTouch touchscreen is a glass overlay with transmitting and receiving piezoelectric transducers for both the X and Y axes. The touchscreen controller sends a five-megahertz electrical signal to the transmitting transducer, which converts the signal into ultrasonic waves within the glass. These waves are directed across the front surface of the touchscreen by an array of reflectors. Reflectors on the opposite side gather and direct the waves to the receiving transducer, which reconverts them into an electrical signal— a digital map of the touchscreen surface.

When you touch the screen, you absorb a portion of the wave traveling across it. The received signal is then compared to the stored digital map, the change recognized, and a coordinate calculated. This process happens independently for both the X and Y axes. By measuring the amount of the signal that is absorbed, a Z-axis is also determined. The digitized coordinates are transmitted to the computer for processing.



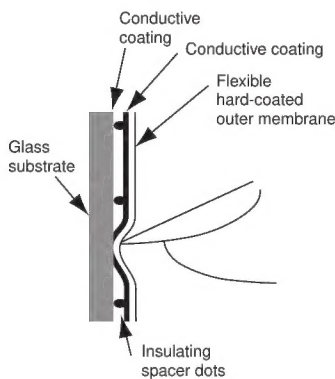
Users should independently evaluate the suitability of the product for their application.

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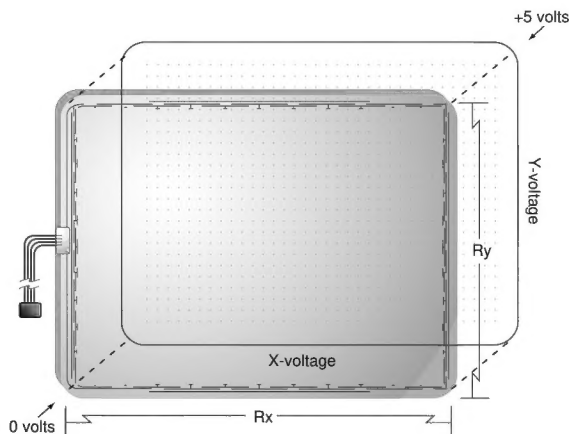
AccuTouch Five-Wire Resistive Technology

AccuTouch

Formed to fit the shape of a display, the AccuTouch glass panel has a coating of uniform resistivity. A polyester cover sheet is tightly suspended over the top of the glass, separated from it by small, transparent insulating dots. The cover sheet has a hard, durable coating on the outer side and a conductive coating on the inner side. With a light touch, the conductive coating makes electrical contact with the coating on the glass.



The AccuTouch controller circuit applies a voltage gradient across the resistive surface of the glass. The voltages at the point of contact are the analog representation of the position touched. The controller digitizes these voltages and transmits them to the computer for processing.



AccuTouch products— for clerk- or employee-activated applications

- Point-of-sale terminals
- Industrial process control
- Handheld computers
- Medical equipment
- Screenphones
- Office equipment, such as photocopiers and franking machines
- Transportation

AccuTouch benefits


- Five-wire resistive technology
- Stable, “drift-free” operation— for touch response that’s always accurate
- Highest touchpoint density in the industry
- Fast touch response
- Finger, gloved-hand, and stylus activation
- Durable surface that stands up to harsh contaminants and chemicals
- Gasket sealable
- Flat and spherical touchscreen options for design flexibility

Users should independently evaluate the suitability of the product for their application.

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Why an Elo Touchmonitor?

After more than 25 years of integrating
touchscreens into computer monitors of
every conceivable description, Elo has
channeled its engineering and
manufacturing expertise into a complete
“Plug and Touch” solution for its customers.



Elo applies its extensive knowledge of touch
technology and displays to the design and
manufacture of high-quality, reliable
touchmonitors with full agency approvals
and Elo’s renowned service and support.

Buying touchmonitors directly from Elo is
the surest, fastest way to get your touch
application up and running.



UNIVERSAL SERIAL BUS

High Quality, Safety, and Support

Standard Agency Approvals

Manufacturer's Warranty

Easy System Integration



You shop once. Elo touchmonitors allow you to source a complete touch solution from one vendor, rather than three (touchscreen kit, monitor, integration service). So, Elo touchmonitors save you time or a potentially high investment in monitor integration (capital equipment, supplies, facilities, expertise, and personnel).

You get a touchmonitor designed for touch. Not all touchmonitors are created alike. Elo sets monitor specifications that enable the production of high-quality, low-cost monitors that are optimized for touch. Elo can also provide custom modification, incorporating a variety of cabling, sealing, and internal controller and other options, so your touchmonitor is perfectly suited to your solution (see page 27).

Off-the-shelf touchmonitors have you up and running quickly. Elo and its distribution partners are also able to offer you next-day delivery on many products. "Plug and Touch" means your USB touchmonitor is touch ready, right out of the box.

Elo's kiosk touchmonitors have fixed outside dimensions. Elo will maintain the model design of its metal case touchmonitors much longer than the average plastic case monitor manufacturer, reducing the need to redesign your application around a monitor component change.

Avoid safety risks to yourself, or your monitor. Everyone knows to avoid electrical shock from high-voltage components inside the monitor, but did you know that it's possible to shorten the life of your monitor if the power tap is installed incorrectly? Or that a poorly sealed screen will allow dust to degrade the optics of your screen? With an Elo touchmonitor you get the assurance of quality that lasts over time.

Elo uses ruggedized packaging. To ensure that the touchmonitor makes it to you— and on to your customer, Elo takes special care in securing touch components inside the monitor and using packaging that withstands all industry standard drop tests.

You have all the information. Elo touchmonitors ship with the Elo TouchTools CD, which contains drivers for all popular operating systems, demo software, technical manuals, and diagnostic software. Drivers, technical information, and product specs are also available 24 hours a day on our Web site (www.elotouch.com).

Elo touchmonitors come with agency approvals. Elo only ships touchmonitors that are fully qualified to safety, EMI, and Low Emissions ratings. Any previous monitor manufacturer's qualifications are re-tested after the addition of touch components as required by law. In fact, Elo's standard CRT touchmonitors contain all best-practice recognized features, such as digital, on-screen display (OSD) controls; power management (EPA/energy star, VESA/DPMS); and Plug and Play compatibility (VESA DDC1 and 2B compliant).

Manufacturer's warranty. Without the agreement of the monitor manufacturer, a monitor's warranty is voided as soon as the monitor is opened. With an Elo touchmonitor you get Elo's guarantee, in warranty, of full customer satisfaction.

And every Elo touchmonitor, the world over, comes with Elo's quality service and dedicated technical support staff.



FC Tested To Comply
With FCC Standards
FOR HOME OR OFFICE USE



12.1" TrimLine LCD Touchmonitor



SPECIFICATIONS

LCD		12.1" (30.7 cm), active matrix color TFT LCD
Optimal resolution		800 x 600 at 60, 72, or 75 Hz (VESA SVGA)
Other supported resolutions		640 x 480 at 60, 72, or 75 Hz (VESA, IBM, VGA) 640 x 480 at 67 Hz (Mac) 640 x 480 at 56 or 60 Hz (PC 98)
Brightness without touchscreen		250 cd/m ²
Brightness with touchscreen		188 cd/m ² (typical)
Contrast ratio		100:1
Colors		16.7 million
Dot pitch		0.31 mm
Viewing angle (from center)	Left/right	±50°
	Up/down	60°/20°
Scanning frequency	Horizontal	24–50 kHz
	Vertical	55–85 Hz
Video bandwidth		50 MHz
Signal connector		Mini D-Sub 15-pin (female); Universal Mac adapter available separately.
Display area dimensions	Horizontal	9.7" (246 mm)
	Vertical	7.3" (185 mm)
Monitor dimensions	Width	13.4" (340 mm)
	Height	11.3" (287 mm)
	Depth	6.7" (170 mm)
Power		100–240 V, 50–60 Hz, 20 W (max.)
Operating temperature and humidity		50°F to 104°F maximum, 85% humidity
Storage temperature and humidity		–4°F to 140°F maximum, 90% humidity
Warranty		1 year
Additional features		Two 1-watt speakers (built-in)
Weight		Actual: 10 lb; shipping: 17 lb

ORDERING INFORMATION

Display Size	Touchscreen Technology	Touchscreen Controller	Surface Treatment	Elo Part Number	Agency Approvals	Lead Time	Min. Order Quantity
12.1" TrimLine LCD	AccuTouch (5-wire resistive)	Internal serial	Antiglare	870141-000	UL, cUL, FCC Class A, CE, TÜV-GS	Stock item	1

- All prices, models, and availability subject to change without notice.
- Manuals and software are not included with any order; details on page 24.
- Stock quantities may be limited. Larger quantities are available within one week.
- Users should independently evaluate the suitability of the product for their application.
- Graphic cards require 4-MB video memory.

Elo TouchSystems (800) 356-8682 or (650) 361-2507 • Fax (650) 361-5579 • www.elotouch.com

15" TrimLine LCD Touchmonitors



SPECIFICATIONS

LCD	15.1" (38.6 cm), active matrix color TFT LCD	
Optimal resolution	1024 x 768 (XGA) at 60- 75 Hz	
Other supported resolutions	640 x 480 at 60- 75 Hz 800 x 600 at 60- 75 Hz	
Brightness with touchscreen	IntelliTouch: 185 cd/m ² ; AccuTouch: 150 cd/m ²	
Brightness without touchscreen	200 cd/m ²	
Contrast ratio	300:1	
Colors	262 thousand	
Dot pitch	0.30 mm	
Viewing angle (from center)	Left/right	±80°
	Up/down	55°/60°
Scanning frequency	Horizontal	30- 61 kHz
	Vertical	56- 75 Hz
Video bandwidth	80 MHz	
Signal connector	Mini D-Sub 15-pin (female); Universal Mac adapter available separately.	
Display area dimensions	Horizontal	12.1" (307.2 mm)
	Vertical	9.1" (230.4 mm)
Monitor dimensions	Width	15.1" (402 mm)
	Height	15.0" (418 mm)
	Depth	6.9" (176 mm)
Power	100- 240 V, 50- 60 Hz ±3 Hz, 40 W (maximum)	
Operating temperature	41°F to 95°F	
Storage temperature	- 43°F to 140°F	
Operating or storage humidity	95% (max.)	
Warranty	1 year	
Weight	Actual: 12 lb; shipping: 19 lb	

ORDERING INFORMATION

Display Size	Touchscreen Technology	Touchscreen Controller	Surface Treatment	Elo Part Number	Agency Approvals	Lead Time	Min. Order Quantity
14" TrimLine LCD	IntelliTouch (surface wave)	Internal serial	Antiglare	237095-000	UL, cUL, FCC Class A, TUV, CE	Available 2/1/99	1
15" TrimLine LCD	AccuTouch (5-wire resistive)	Internal serial	Antiglare	552345-000	UL, cUL, FCC Class A TUV, CE	Available 2/1/99	1

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14" Desktop CRT Touchmonitors

140C Series



SPECIFICATIONS

CRT		14" (35.56 cm), viewable 13.2" (33.5 cm), spherical, 0.28-mm dot pitch
Resolution presets		720 x 400 at 70 Hz 640 x 480 at 60, 72, 75 Hz 800 x 600 at 56, 60, 72, 75, 85 Hz 1024 x 768 at 60 Hz NI or 87 Hz interlaced
Scanning frequency	Horizontal Vertical	30-54 kHz 50-120 Hz
Video bandwidth		65 MHz (typical)
Signal connector		Mini D-Sub 15-pin (female); Universal Mac adapter available separately.
Display area dimensions	Horizontal Vertical	9.8" (250 mm) 7.3" (185 mm)
Monitor dimensions	Width Height Depth	13.8" (350 mm) 13.9" (353 mm) 14.8" (377 mm)
Power		100-240 Vac, 50/60 Hz, 75 W (max.)
Warranty		2 years monitor, 10 years Intellitouch screen, 5 years Accutouch screen, 5 years Controller
Additional features		<ul style="list-style-type: none"> Digital onscreen display controls, VESA DPMS, VESA DDC 1/2B Plug and Play
Weight		Actual: 24 lb; shipping: 30 lb

ORDERING INFORMATION

Display Size	Touchscreen Technology	Touchscreen Controller	Surface Treatment	Elo Part Number	Agency Approvals	Lead Time	Min. Order Quantity
14"	AccuTouch (5-wire resistive)	Internal serial	Antiglare	528547-000	UL, cUL, FCC Class A, CE, TÜV-GS	Stock item	1
14"	AccuTouch (5-wire resistive)	Internal serial	Clear	813233-000	UL, cUL, FCC Class A, CE, TÜV-GS	Stock item	1
14"	AccuTouch (5-wire resistive)	Internal USB	Antiglare	396665-000	UL, cUL, FCC Class A, CE, TÜV-GS	1 week	1
14"	AccuTouch (5-wire resistive)	None	Antiglare	142389-000	UL, cUL, FCC Class A	Stock item	1
14"	AccuTouch (5-wire resistive)	None	Clear	766493-000	UL, cUL, FCC Class A	Stock item	1
14"	IntelliTouch (surface wave)	Internal serial	Antiglare	704777-000	UL, cUL, FCC Class A, CE, TÜV-GS	Stock item	1
14"	IntelliTouch (surface wave)	Internal serial	Clear	263313-000	UL, cUL, FCC Class A, CE, TÜV-GS	Factory quote	500

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15" Desktop CRT Touchmonitors

150C Series



SPECIFICATIONS

CRT		15" (38.10 cm), viewable 13.7" (34.79 cm), FST, 0.28-mm dot pitch
Resolution presets		720 x 400 at 70 Hz 640 x 480 at 75 or 85 Hz 800 x 600 at 75 or 85 Hz 1024 x 768 at 75 Hz interlaced or 85 Hz NI 1280 x 1024 at 60 Hz
Scanning frequency	Horizontal	30-70 kHz
	Vertical	50-150 Hz
Video bandwidth		85 MHz
Signal connector		Mini D-Sub 15-pin (female); Universal Mac adapter available separately.
Display area dimensions	Default	10.2" (260 mm) H x 7.7" (195 mm) V
	Maximum	11.0" (280 mm) H x 8.3" (210 mm) V
Monitor dimensions	Width	14.4" (365 mm)
	Height	14.6" (370 mm)
	Depth	15.1" (384 mm)
Power		100-240 Vac, 50/60 Hz, 80 W (max.)
Warranty		2 years monitor, 10 years Intellitouch screen, 5 years Accutouch screen, 5 years Controller
Additional features		<ul style="list-style-type: none"> Digital onscreen display controls MPR II, Energy Star, VESA DPMS/NUTEK, VESA DDC 1/2B Plug and Play, ISO 9241/3
Weight		Actual: 28 lb; shipping: 35 lb

ORDERING INFORMATION

Display Size	Touchscreen Technology	Touchscreen Controller	Surface Treatment	Elo Part Number	Agency Approvals	Lead Time	Min. Order Quantity
15"	AccuTouch (5-wire resistive)	Internal serial	Antiglare	803749-000	UL, cUL, FCC Class A, CE, TÜV-GS	Stock item	1
15"	AccuTouch (5-wire resistive)	Internal serial	Clear	151491-000	UL, cUL, FCC Class A, CE, TÜV-GS	1 week	1
15"	AccuTouch (5-wire resistive)	Internal USB	Antiglare	277615-000	UL, cUL, FCC Class A, CE, TÜV-GS	1 week	1
15"	AccuTouch (5-wire resistive)	None	Antiglare	110055-000	UL, cUL, FCC Class A	Stock item	1
15"	AccuTouch (5-wire resistive)	None	Clear	359991-000	UL, cUL, FCC Class A	1 week	1
15"	IntelliTouch (surface wave)	Internal serial	Antiglare	131593-000	UL, cUL, FCC Class A, CE, TÜV-GS	Stock item	1
15"	IntelliTouch (surface wave)	Internal serial	Clear	934411-000	UL, cUL, FCC Class A, CE, TÜV-GS	Stock item	1
15"	IntelliTouch (surface wave)	Internal USB	Antiglare	166865-000	UL, cUL, FCC Class A, CE, TÜV-GS	1 week	1
15"	IntelliTouch (surface wave)	None	Antiglare	411309-000	UL, cUL, FCC Class A	1 week	1
15"	IntelliTouch (surface wave)	None	Clear	402697-000	UL, cUL, FCC Class A	1 week	1

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17" Desktop CRT Touchmonitors

170C Series



SPECIFICATIONS

CRT		17" (43.18 cm), viewable 15.8" (40.13 cm), FST, 0.27-mm dot pitch
Resolution presets		720 x 400 at 70 Hz 640 x 480 at 75 or 85 Hz 800 x 600 at 75 or 85 Hz 1024 x 768 at 75 Hz interlaced or 85 Hz NI 1280 x 1024 at 60 Hz
Scanning frequency	Horizontal	30-70 kHz
	Vertical	50-150 Hz
Video bandwidth		100 MHz
Signal connector		Mini D-Sub 15-pin (female); Universal Mac adapter available separately.
Display area dimensions	Default	11.8" (300 mm) H x 8.9" (225 mm) V
	Maximum	12.6" (320 mm) H x 9.4" (239 mm) V
Monitor dimensions	Width	16.6" (422 mm)
	Height	16.1" (410 mm)
	Depth	17.6" (447.3 mm)
Power		100-240 Vac, 60 Hz, 90 W (max.)
Warranty		2 years monitor, 10 years Intellitouch screen, 5 years Accutouch screen, 5 years Controller
Additional features		<ul style="list-style-type: none"> Digital onscreen display controls, MPR II, Energy Star, VESA DPMS, VESA DDC 1/2B Plug and Play, ISO 9241/3
Weight		Actual: 37 lb; shipping: 46 lb

ORDERING INFORMATION

Display Size	Touchscreen Technology	Touchscreen Controller	Surface Treatment	Elo Part Number	Agency Approvals	Lead Time	Min. Order Quantity
17"	AccuTouch (5-wire resistive)	Internal serial	Antiglare	115669-000	UL, cUL, FCC Class A, CE, TÜV-GS	1 week	1
17"	AccuTouch (5-wire resistive)	Internal serial	Clear	704837-000	UL, cUL, FCC Class A, CE, TÜV-GS	1 week	1
17"	AccuTouch (5-wire resistive)	None	Antiglare	791441-000	UL, cUL, FCC Class A	1 week	1
17"	AccuTouch (5-wire resistive)	None	Clear	446099-000	UL, cUL, FCC Class A	1 week	1
17"	IntelliTouch (surface wave)	Internal serial	Antiglare	892873-000	UL, cUL, FCC Class A, CE, TÜV-GS	Stock item	1
17"	IntelliTouch (surface wave)	Internal serial	Clear	226201-000	UL, cUL, FCC Class A, CE, TÜV-GS	Stock item	1
17"	IntelliTouch (surface wave)	Internal USB	Antiglare	556917-000	UL, cUL, FCC Class A, CE, TÜV-GS	1 week	1
17"	IntelliTouch (surface wave)	None	Antiglare	225761-000	UL, cUL, FCC Class A	1 week	1
17"	IntelliTouch (surface wave)	None	Clear	619729-000	UL, cUL, FCC Class A	1 week	1

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Why a Kiosk Touchmonitor?



Elo's kiosk touchmonitors are the industry's first sealed touchmonitors designed specifically for kiosks. Robust, sealed, and versatile, Elo has the ideal touchmonitor solution for your kiosk applications.

Considerable Reduction of Your Overall Cost

Industry-leading engineering for robust operation.

The well-ventilated metal chassis keeps the CRT cooler, significantly extending its operational life. The flat monitor bezel provides a clean interface with the kiosk enclosure and is sealed to the touchscreen to protect the monitor electronics from splashed liquids, dirt, and dust.

Easy integration into your kiosk design. With their custom-designed metal chassis and flat front bezel surface, Elo's kiosk touchmonitors integrate easily into your kiosk design. The touchmonitor can be mounted from its front or base (mounting hardware is provided), eliminating the need to spec and purchase brackets and supports.

Fixed outside dimensions. Elo will maintain the model design of its metal-cased touchmonitors much longer than the average plastic case monitor manufacturer, reducing the need to redesign your kiosk around a monitor component change.

Rugged Performance in Tough Environments

Intelligent scratch tolerance. Elo's IntelliTouch touchscreen will continue to operate even with deep scratches. It actually "reprograms" around surface contamination like gum, grease, and dirt. This capability is especially important in public access kiosks where wear and tear and vandalism can occur.

High light transmission for bright clear graphics. You have a choice of the highest-clarity, pure-glass touchscreens in the industry: Elo's IntelliTouch or SecureTouch surface-wave-technology touchscreens.

Long touchscreen performance life. Elo's surface wave technology has been operationally tested to 50 million touches in one location without failure.

Low Maintenance, High Quality

Reliable, drift-free operation. This means no re-calibration, which will help keep your maintenance costs down. On-screen display capability allows users to make image adjustments without having to open the monitor.

Easy worldwide agency approval. Elo's kiosk touchmonitor products are UL, TÜV, FCC-A, MPRII, and CE compliant, making it easier for you to attain worldwide agency approval of your kiosk.

Extensive warranties. Elo stands behind the reliability, quality, and ruggedness of its kiosks by offering a two-year warranty on each CRT monitor, a ten-year warranty on the touchscreen, and a five-year warranty on the controller.

More Solutions from Elo

Signature capture products. Scribex signature pads or special signature kiosk monitors allow you to capture a signature as part of your kiosk application.

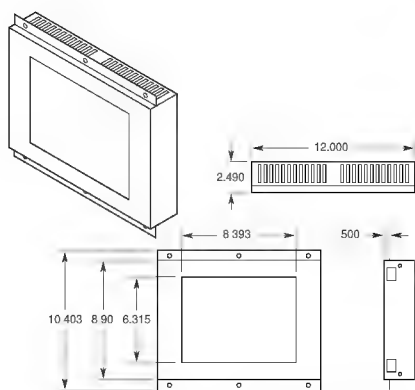
Web Enabler. A Web browser overlay for converting Web sites to kiosk applications.

Kiosk Partner program. Full-service kiosk providers to give you the complete kiosk system (see inside back cover).

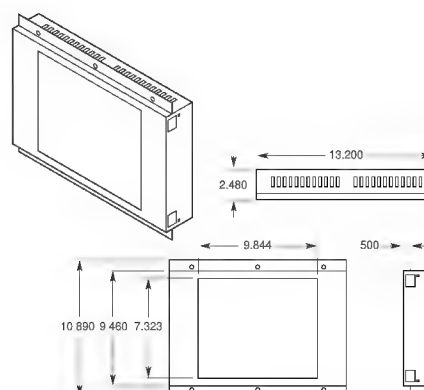
Kiosk white papers and "Ten Tips for Using Touch with Your Application Software" (see page 32). These materials and more are available on our Web site.

Every Elo kiosk touchmonitor, the world over, comes with Elo's quality service, with support from Elo's dedicated technical staff.

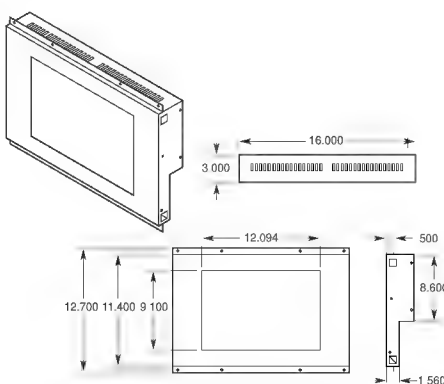
10.4", 12.1", 15.0" TrimLine Kiosk Touchmonitors



10.4" TrimLine Kiosk Touchmonitor*



12.1" TrimLine Kiosk Touchmonitor*



15" TrimLine Kiosk Touchmonitor*

*Dimensions in inches; 1 in = 2.54 cm.

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Typical Performance Parameters

TrimLine Kiosk Touchmonitors

SPECIFICATIONS

	10.4"	12.1"	15"
Display size	10.4" diagonal	12.1" diagonal	15" diagonal
Display type	Active matrix TFT LCD	Active matrix TFT LCD	Active matrix TFT LCD
Useful screen area	8.3" (211 mm) H x 6.2" (158 mm) V	9.7" (246 mm) H x 7.5" (185 mm) V	12.0" (304 mm) H x 9.0" (228 mm) V
Pixel format	640 x 480 (VGA)	800 x 600 (SVGA)	1024 x 768 (XGA)
Colors	16 million with dithering	16 million with dithering	16 million with dithering
Brightness without touchscreen	300 cd/m ²	270 cd/m ²	200 cd/m ²
Brightness with touchscreen	285 cd/m ²	255 cd/m ²	190 cd/m ²
Horizontal viewing angle	±70 or 140 degrees total	±70 or 140 degrees total	±70 or 140 degrees total
Vertical viewing angle	+70/-40 or 110 degrees total	±55 or 110 degrees total	±60 or 120 degrees total
Contrast ratio	300:1	300:1	150:1
Operating temperature	0°C to 40°C	0°C to 35°C	0°C to 35°C
Storage temperature	-25°C to 70°C	-25°C to 60°C	-25°C to 60°C
Humidity	95% noncondensing	95% noncondensing	95% noncondensing
Size	See drawing on page 12	See drawing on page 12	See drawing on page 12
Video connector	Mini D-sub 15 pin (female)	Mini D-sub 15 pin (female)	Mini D-sub 15 pin (female)
Touchscreen connector	RS-232 DB-9 (female)	RS-232 DB-9 (female)	RS-232 DB-9 (female)
Vertical scan rate	60 Hz	56 to 85 Hz	56 to 85 Hz
Input video	VGA analog video	VGA/SVGA analog video	VGA/SVGA/XGA analog video
Input power	100-240 Vac, 50/60 Hz universal (internal power supply)	100 to 240 Vac, 50/60 Hz universal (internal power supply)	100 to 240 Vac, 50/60 Hz universal (internal power supply)
Power dissipation	25 W at max. brightness	35 W at max. brightness	40 W at max. brightness
Agency approvals	UL, cUL, TÜV, FCC-B, CE	UL, cUL, TÜV, FCC-B, CE	UL, cUL, TÜV, FCC-B, CE
Backlight lamp life	25,000 hours at full brightness	30,000 hours at full brightness	25,000 hours at full brightness
Warranty	Monitor: 1 year Touch components: 5 years	Monitor: 1 year Touch components: 5 years	Monitor: 1 year Touch components: 5 years
Weight	IntelliTouch: Actual: 9.0 lb; shipping: 16 lb SecureTouch: Actual 9.5 lb; shipping: 16.5 lb	IntelliTouch: Actual: 10.5 lb; shipping: 17 lb SecureTouch: Actual: 11.0 lb; shipping: 17.5 lb	IntelliTouch: Actual 15.0 lb; shipping: 21 lb SecureTouch: 15.8 lb Actual: 15.8 lb; shipping: 21.5 lb

ORDERING INFORMATION

Display Size	Touchscreen Technology	Touchscreen Controller	Surface Treatment	Elo Part Number	Agency Approvals	Lead Time	Min. Order Quantity
10.4" LCD kiosk touchmonitor	IntelliTouch (surface wave)	Internal serial	Antiglare	266683-000	UL, cUL, FCC Class A, CE, TÜV-GS	1 week	1
10.4" LCD kiosk touchmonitor	SecureTouch 0.25" (surface wave)	Internal serial	Antiglare	760187-000	UL, cUL, FCC Class A, CE, TÜV-GS	1 week	1
12.1" LCD kiosk touchmonitor	IntelliTouch (surface wave)	Internal serial	Antiglare	717117-000	UL, cUL, FCC Class A, CE, TÜV-GS	Stock item	1
12.1" LCD kiosk touchmonitor	SecureTouch 0.25" (surface wave)	Internal serial	Antiglare	757823-000	UL, cUL, FCC Class A, CE, TÜV-GS	1 week	1
12.1" LCD kiosk touchmonitor	Accutouch (5-wire resistance)	Internal serial	Antiglare	237009-000	UL, cUL, FCC Class A, CE, TÜV-GS	1 week	1
15.0" LCD kiosk touchmonitor	IntelliTouch (surface wave)	Internal serial	Antiglare	985341-000	UL, cUL, FCC Class A, CE, TÜV-GS	Stock item	1
15.0" LCD kiosk touchmonitor	SecureTouch 0.25" (surface wave)	Internal serial	Antiglare	757835-000	UL, cUL, FCC Class A, CE, TÜV-GS	1 week	1
15.0" LCD kiosk touchmonitor	Accutouch (5-wire resistance)	Internal serial	Antiglare	280455-000	UL, cUL, FCC Class A, CE, TÜV-GS	1 week	1
Remote OSD module				960179-000		Stock item	

• All prices, models, and availability subject to change without notice.
• Manuals and software are not included with any order; details on page 24.

• Stock quantities may be limited. Larger quantities are available within one week.
• Graphic cards require 4-MB video memory.

15" Kiosk CRT Touchmonitors

150K Series



SPECIFICATIONS

CRT		15" (38.10 cm), viewable 13.7" (34.79 cm), FST, 0.28-mm dot pitch
Resolution presets		720 x 400 at 70 Hz 640 x 480 at 75 or 85 Hz 800 x 600 at 75 or 85 Hz 1024 x 768 at 75 Hz interlaced or 85 Hz NI 1280 x 1024 at 60 Hz
Scanning frequency	Horizontal Vertical	30-70 kHz 50-150 Hz
Video bandwidth		85 MHz
Signal connector		Mini D-Sub 15-pin (female)
Display area dimensions	Default Maximum	10.2" (260 mm) H x 7.7" (195 mm) V 11" (280 mm) H x 8.3" (210 mm) V
Monitor dimensions		See next page.
Power		100-240 Vac, 50/60 Hz, 80 W (max.)
Temperature	Operating Storage	5°C to 35°C -30°C to 60°C
Warranty		2 years monitor, 10 years IntelliTouch, 5 years Controller
Additional features		<ul style="list-style-type: none"> • Minibezel, which is sealed to protect against splashed liquids, dirt, and dust. • Special mounting brackets, extra ventilation. • Plug and Play compatibility: DDC (VESA), MPR II.
Weight		Actual: 34.2 lb; shipping: 44 lb

ORDERING INFORMATION

Display Size	Touchscreen Technology	Touchscreen Controller	Surface Treatment	Elo Part Number	Agency Approvals	Lead Time	Min. Order Quantity
15" CRT kiosk touchmonitor	IntelliTouch (surface wave)	Internal serial	Antiglare	279023-000	UL, cUL, FCC Class A, CE, TÜV-GS	Stock item	1
15" CRT kiosk touchmonitor	IntelliTouch (surface wave)	Internal serial	Clear	131067-000	UL, cUL, FCC Class A, CE, TÜV-GS	Stock item	1
15" CRT kiosk touchmonitor	IntelliTouch (surface wave)	Internal USB	Antiglare	856297-000	UL, cUL, FCC Class A, CE, TÜV-GS	1 week	1

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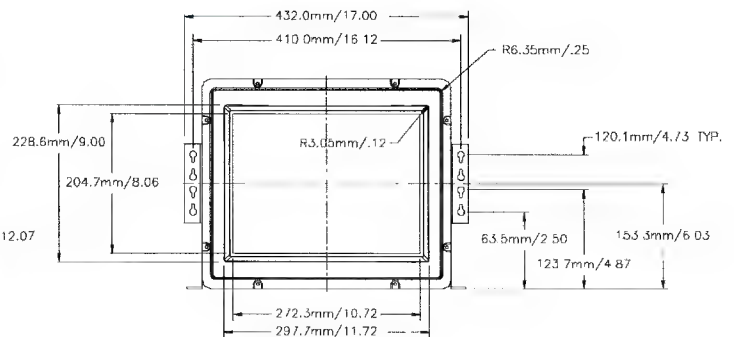
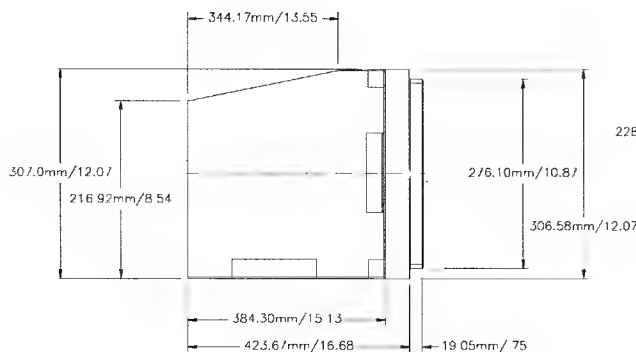
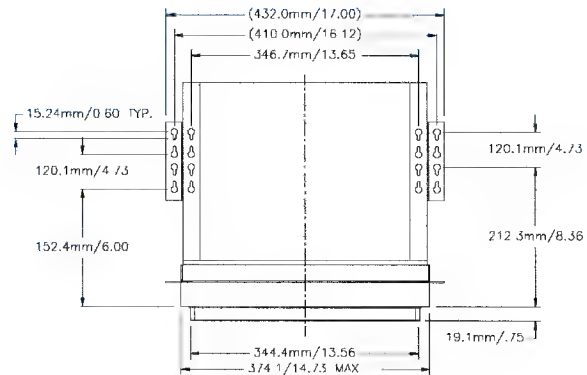
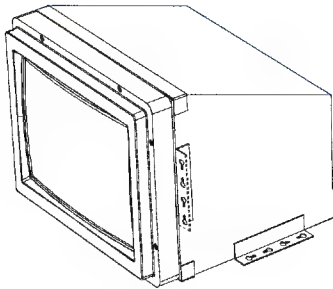
Users should independently evaluate the suitability of the product for their application.

Elo TouchSystems (800) 356-8682 or (650) 361-2507 • Fax (650) 361-5579 • www.elotouch.com

15" Kiosk CRT Touchmonitors

150K Series

DIMENSIONS (in millimeters/inches)



Robust, stable, sealed touchmonitors for kiosks

Elo's kiosk touchmonitors are the industry's first sealed touchmonitors designed specifically for kiosks. With a custom-designed metal chassis and a flat front bezel surface, they offer the ideal solution for kiosks.

Ease of integration for reduced project costs

Elo's kiosk touchmonitors integrate easily into kiosk designs. The flat monitor bezel provides a clean interface with the kiosk enclosure and is sealed to the touchscreen to protect the monitor electronics from splashed liquids, dirt, and dust.

Users should independently evaluate the suitability of the product for their application.

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17" Kiosk CRT Touchmonitors

170K Series



SPECIFICATIONS

CRT		17" (43.18 cm), viewable 15.8" (40.13 cm), FST, 0.27-mm dot pitch
Resolution presets		720 x 400 at 70 Hz 640 x 480 at 75 or 85 Hz 800 x 600 at 75 or 85 Hz 1024 x 768 at 75 Hz interlaced or 85 Hz NI 1280 x 1024 at 60 Hz
Scanning frequency	Horizontal Vertical	30-70 kHz 50-150 Hz
Video bandwidth		100 MHz
Signal connector		Mini D-Sub 15-pin (female)
Display area dimensions	Default Maximum	11.8" (300 mm) H x 8.9" (225 mm) V 12.6" (320 mm) H x 9.4" (239 mm) V
Monitor dimensions		See next page.
Power		100-240 Vac, 50/60 Hz, 90 W (max.)
Temperature	Operating Storage	5°C to 35°C -30°C to 60°C
Warranty		2 years monitor, 10 years IntelliTouch touchscreen, 5 years controller
Additional features		<ul style="list-style-type: none"> Minibezel, which is sealed to protect against splashed liquids, dirt, and dust. Special mounting brackets, extra ventilation. Plug and Play compatibility: DDC (VESA), MPR II.
Weight		Actual: 45 lb; shipping: 55 lb

ORDERING INFORMATION

Display Size	Touchscreen Technology	Touchscreen Controller	Surface Treatment	Elo Part Number	Agency Approvals	Lead Time	Min. Order Quantity
17" CRT kiosk touchmonitor	IntelliTouch (surface wave)	Internal serial	Antiglare	035345-000	UL, cUL, FCC Class A, CE, TÜV-GS	Stock item	1
17" CRT kiosk touchmonitor	IntelliTouch (surface wave)	Internal serial	Clear	977635-000	UL, cUL, FCC Class A, CE, TÜV-GS	1 week	1
17" CRT kiosk touchmonitor	IntelliTouch (surface wave)	Internal USB	Antiglare	164649-000	UL, cUL, FCC Class A, CE, TÜV-GS	1 week	1

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- Manuals and software are not included with any order; details on page 24.
- Stock quantities may be limited. Larger quantities are available within one week.
- Graphic cards require 4-MB video memory.

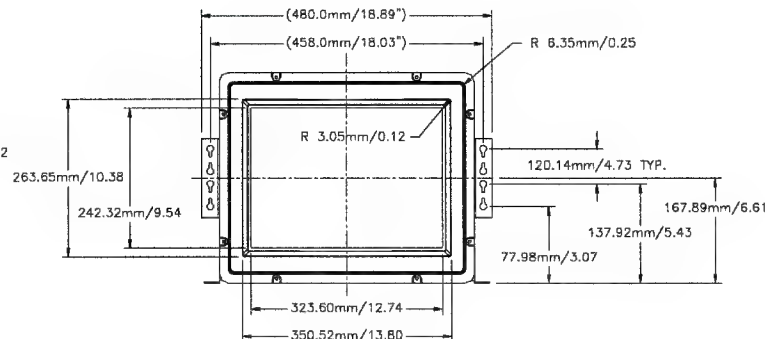
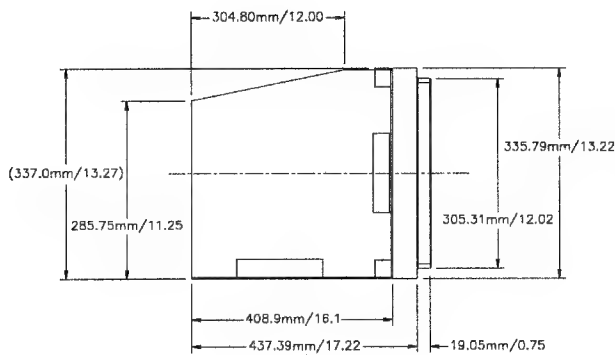
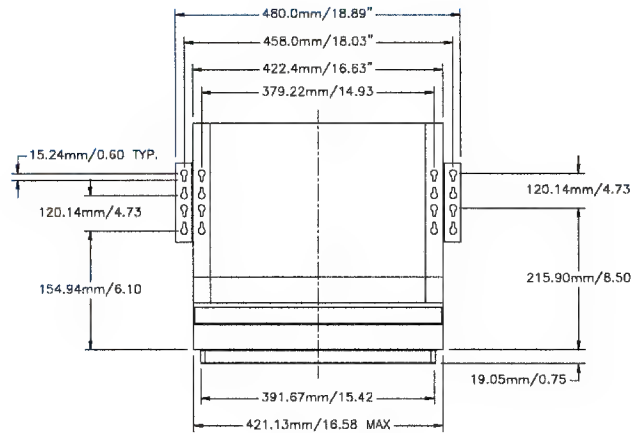
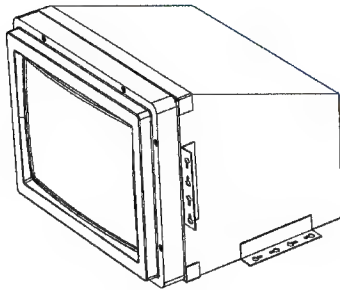
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17" Kiosk CRT Touchmonitors

170K Series

DIMENSIONS (millimeters/inches)



Robust, stable, sealed touchmonitors for kiosks

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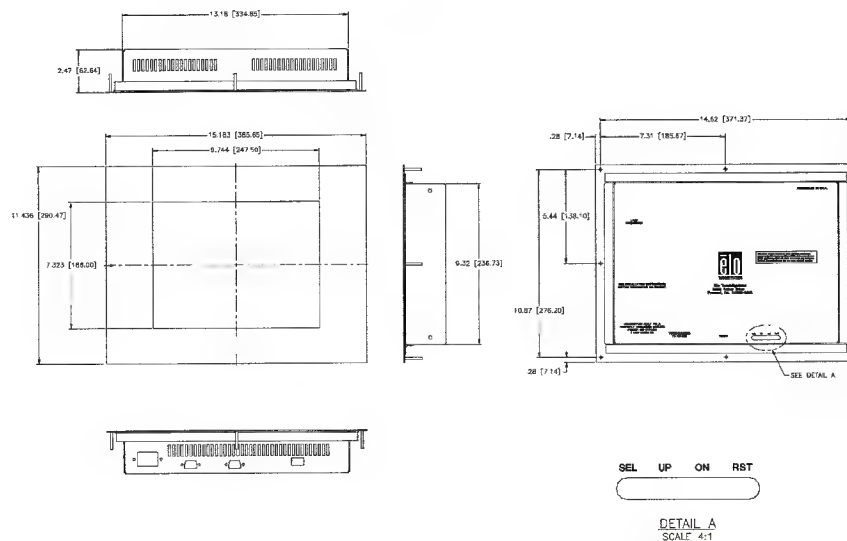
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12.1" and 15.0"

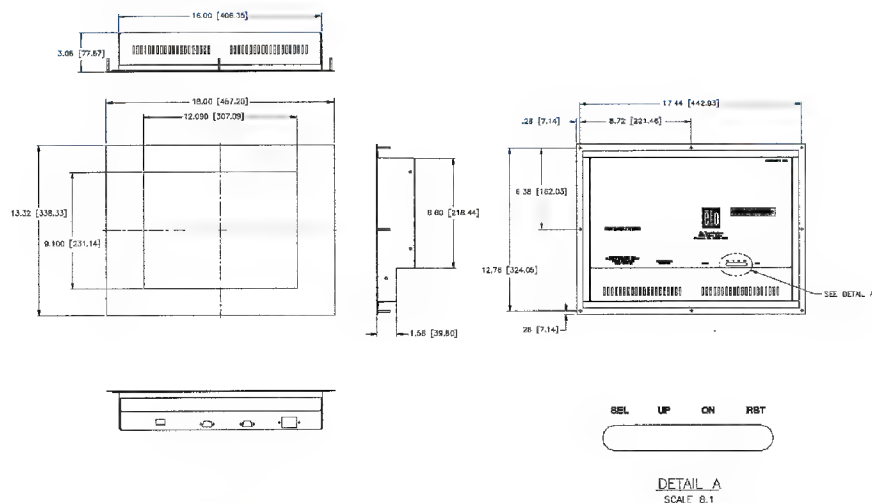
TrimLine Panel Mount Touchmonitors



12" Panel Mount Touchmonitor
(dimensions in inches/mm)



15" Panel Mount Touchmonitor
(dimensions in inches/mm)



Typical Performance Parameters

TrimLine Panel Mount Touchmonitors

SPECIFICATIONS

	12.1"	15"
Display size	12.1" diagonal	15" diagonal
Display type	Active matrix TFT LCD	Active matrix TFT LCD
Useful screen area	9.7" (246 mm) H x 7.5" (185 mm) V	12.0" (304 mm) H x 9.0" (228 mm) V
Pixel format	800 x 600 (SVGA)	1024 x 768 (XGA)
Colors	16 million with dithering	16 million with dithering
Brightness without touchscreen	270 cd/m ²	200 cd/m ²
Brightness with touchscreen	255 cd/m ²	190 cd/m ²
Horizontal viewing angle	±70 or 140 degrees total	±70 or 140 degrees total
Vertical viewing angle	±55 or 110 degrees total	±60 or 120 degrees total
Contrast ratio	300:1	150:1
Operating temperature	0°C to 35°C	0°C to 35°C
Storage temperature	-25°C to 60°C	-25°C to 60°C
Humidity	95% noncondensing	95% noncondensing
Size	See drawing on page 12	See drawing on page 12
Video connector	Mini D-sub 15 pin (female)	Mini D-sub 15 pin (female)
Touchscreen connector	RS-232 DB-9 (female)	RS-232 DB-9 (female)
Vertical scan rate	56 to 85 Hz	56 to 85 Hz
Input video	VGA/SVGA analog video	VGA/SVGA/XGA analog video
Input power	100 to 240 Vac, 50/60 Hz universal (internal power supply)	100 to 240 Vac, 50/60 Hz universal (internal power supply)
Power dissipation	35 W at max. brightness	40 W at max. brightness
Agency approvals	UL, cUL, TÜV, FCC-B, CE	UL, cUL, TÜV, FCC-B, CE
Backlight lamp life	30,000 hours at full brightness	25,000 hours at full brightness
Warranty	Monitor: 1 year Touch components: 5 years	Monitor: 1 year Touch components: 5 years
Weight	IntelliTouch: Actual: 12 lb; shipping: 19 lb SecureTouch: Actual: 12.5 lb; shipping: 19.5 lb AccuTouch: Actual: 12 lb; shipping: 19 lb	IntelliTouch: Actual: 14 lb; shipping: 21 lb SecureTouch: Actual: 14.5 lb; shipping: 21.5 lb AccuTouch: Actual: 14 lb; shipping: 21 lb

ORDERING INFORMATION

Display Size	Touchscreen Technology	Touchscreen Controller	Surface Treatment	Elo Part Number	Agency Approvals	Lead Time	Min. Order Quantity
12.1" LCD panel mount touchmonitor	IntelliTouch (surface wave)	Internal serial	Antiglare	527725-000	UL, cUL, FCC Class B, CE, TÜV-GS	1 week	1
12.1" LCD panel mount touchmonitor	SecureTouch 0.25" (surface wave)	Internal serial	Antiglare	146331-000	UL, cUL, FCC Class B, CE, TÜV-GS	1 week	1
12.1" LCD panel mount touchmonitor	AccuTouch (5-wire resistance)	Internal serial	Antiglare	356773-000	UL, cUL, FCC Class B, CE, TÜV-GS	Stock item	1
15.0" LCD panel mount touchmonitor	IntelliTouch (surface wave)	Internal serial	Antiglare	514773-000	UL, cUL, FCC Class B, CE, TÜV-GS	1 week	1
15.0" LCD panel mount touchmonitor	SecureTouch 0.25" (surface wave)	Internal serial	Antiglare	262985-000	UL, cUL, FCC Class B, CE, TÜV-GS	1 week	1
15.0" LCD panel mount touchmonitor	AccuTouch (5-wire resistance)	Internal serial	Antiglare	757501-000	UL, cUL, FCC Class B, CE, TÜV-GS	Stock item	1
Remote OSD module				960179-000		Stock item	

• All prices, models, and availability subject to change without notice.
• Manuals and software are not included with any order; details on page 24.

• Stock quantities may be limited. Larger quantities are available within one week.
• Graphic cards require 4-MB video memory.

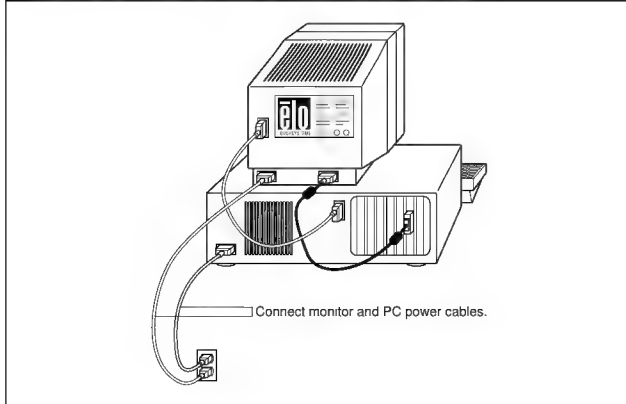
Users should independently evaluate the suitability of the product for their application.

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Touchmonitor Controller Options and Cables

AccuTouch Controllers

AccuTouch Internal Serial or USB Controller

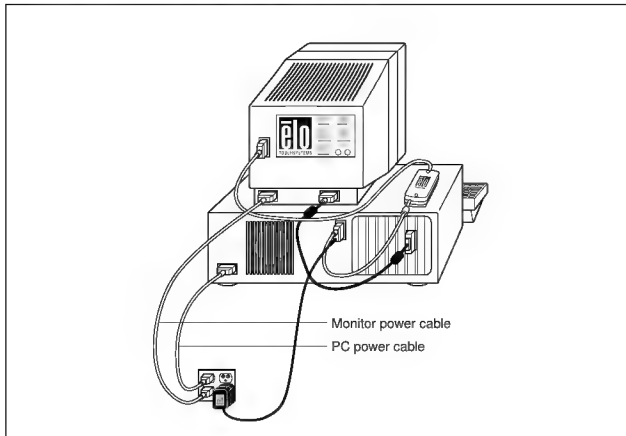


Cables are included for PC-based computers with purchase of the touchmonitor.

For Apple Macintosh computers, additional serial cables must be purchased separately:

632851-000	VGA to Macintosh video
084037-000	DB-9 to 8-pin mini-DIN

AccuTouch External Serial Controller

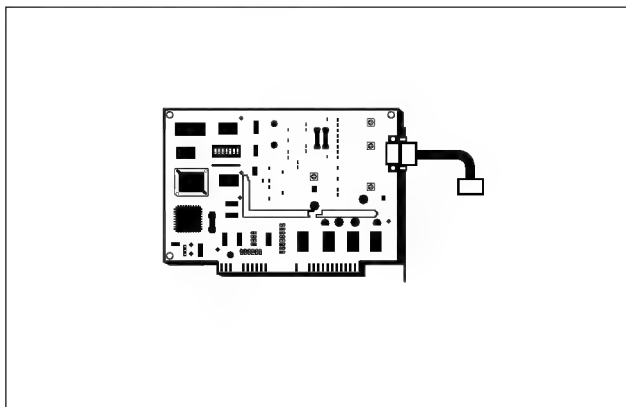


Order the AccuTouch RS-232 external serial controller card, external unit: 462337-000

Order one of the following power supplies:

877989-000	Standard keyboard power tap
073089-000	PS/2 keyboard power tap
370187-000	Wall-mount power kit domestic
460987-000	Wall-mount power kit international
520467-000	Internal monitor power

AccuTouch PC Bus Controller



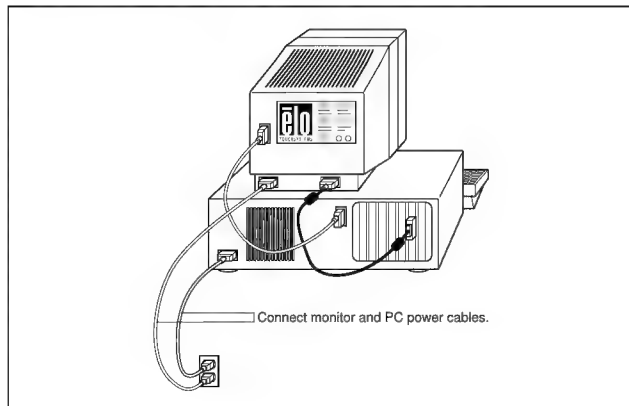
Order the AccuTouch PC-bus controller card, half slot: 981411-000
Additional required cable: 454173-000

Users should independently evaluate the suitability of the product for their application.

Touchmonitor Controller Options and Cables

IntelliTouch Controllers

IntelliTouch Internal Serial or USB Controller

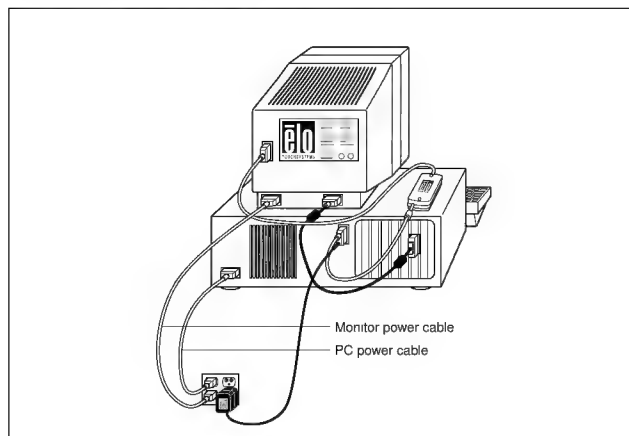


Cables are included for PC-based computers with purchase of the touchmonitor.

For Apple Macintosh computers, additional cables must be purchased separately:

632851-000	VGA to Macintosh video
084037-000	DB-9 to 8-pin mini-DIN

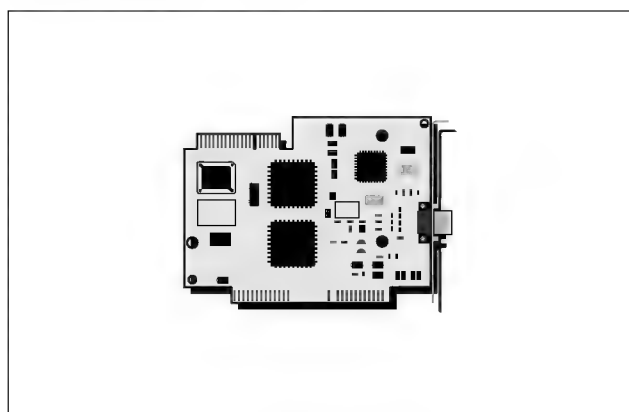
IntelliTouch External Serial Controller



Order the IntelliTouch RS-232 external serial controller card and cable kit:

304749-000	IntelliTouch RS-232 controller card, external unit
538635-000	2310MX European tabletop cable pack
298361-000	2310MX Internal power mount cable pack
694469-000	2310MX Macintosh tabletop cable pack
835253-000	2310MX Tabletop cable pack
099369-000	2310MX Keyboard tap cable pack

IntelliTouch PC Bus Controller



Order the IntelliTouch PC-bus controller card, half slot with cable: 498363-000 and 451043-000

Users should independently evaluate the suitability of the product for their application.

Elo TouchTools Scribex Signature Pad



SPECIFICATIONS

Resolution (horizontal and vertical)	410 lines per inch
Sample rate	377 points per second
MTBF (mean time between failures)	1,000,000 hours
Communications	RS-232, 19200 baud, DB-9 connection
Pen life	250,000 signatures
Operating temperature	0°C to 50°C
Operating relative humidity	10% to 90%, noncondensing

ORDERING INFORMATION

Signature Series Product	Elo Part Number	Lead Time	Min. Order Quantity
Scribex signature pad kit (includes pen and drivers)	918365-000	1 week	1
Scribex pen	271393-000	1 week	1
IntelliTouch stylus	395699-000	1 week	1
AccuTouch stylus	442187-000	1 week	1
IntelliTouch armored stylus	853831-000	1 week	1

Note:

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- Stock quantities may be limited. Larger quantities are available within one week.

Users should independently evaluate the suitability of the product for their application.

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Elo TouchTools

Scribex Signature Pad

Overview

Designed for integration into demanding kiosk applications, the Scribex signature pad provides the high-resolution signature input needed for public-access signature capture and signature verification. The Scribex pad can be integrated into most nonconductive materials, such as plastic, Lexan, wood, or glass. The signature pad will electrically project through material up to 6 millimeters thick. This allows the kiosk developer to define an ergonomically correct, aesthetically pleasing signature input surface for electronic signature capture. The system uses a separate battery-powered, long-life pen, tethered to the kiosk.

Applications

The Scribex signature pad works with Elo's popular kiosk touchmonitors and standard desktop touchmonitors. The pad provides touch with high-resolution signature input for kiosk applications. It is an ideal signature solution for:

- Retail transaction kiosks
- Employment application kiosks
- Government service kiosks
- Merchandise pickup kiosks
- Financial kiosks and super ATMs

Features

- High-resolution signature with 410 lines per inch horizontal and vertical. Provides smooth bitmaps and the resolution required for signature verification.
- High data-sampling rate of 377 data points per second. High data capture for signature verification.
- Durable, electrostatic stylus for long life in public-access environments. Not subject to cord damage. Rated to 250,000 signatures before replacement.
- Sensor board that easily integrates into a kiosk and projects through nonferrous material up to 6 millimeters thick. This gives the developer the flexibility to create ergonomically correct signature input that fits the kiosk look and design.
- Board communication via an RS-232 serial port to driver objects that are built into the host application. The Scribex pad is powered from the host port.
- The Scribex pad works through paper. Signatures can be captured in electronic form and on paper simultaneously. Elo provides an ink cartridge for hard-copy receipts.
- Response only to the stylus, providing full palm rejection.

Users should independently evaluate the suitability of the product for their application.

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Elo TouchTools Software Drivers



MonitorMouse touchscreen drivers

Elo's touchscreen driver software is included with the hardware. Please specify the operating systems required:

ORDERING INFORMATION

Driver Software	Elo Part Number
Elo TouchTools CD ROM (includes all software drivers, manuals and documentation)	450261-000
DOS & Windows 3.x Driver Guide/Diskette, which contains: <ul style="list-style-type: none"> DOS driver (ELODEV) DOS and Windows mouse emulator (MonitorMouse for DOS & Windows 3.x) Keystroke emulator (TouchBack) 	191763-000
MonitorMouse for Windows 95 diskette	628029-000
MonitorMouse for Windows NT diskette	027657-000
MonitorMouse for Windows CE diskette	Available Winter 98/99
MonitorMouse for OS/2 diskette	292761-000
MonitorMouse for Macintosh diskette	524471-000
DOS Programmer's Toolkit - includes TouchUp and TouchBack	678995-000
MonitorMouse for NT 4.0	835625-000
Windows 98 USB TouchTools	790233-000

Driver updates are free for Elo customers and may be downloaded from our Web site: www.elotouch.com

Technical manuals

Up to 24 hardcopy manuals are provided free upon request with hardware orders. Electronic copies and manuals are downloadable from www.elotouch.com. Also 3.5" floppy disks are available upon request.

Manuals	Elo Part Number
AccuTouch Product Manual	821615-000
IntelliTouch Ultra Product Manual	201077-000
SmartSet Technical Reference Controller Manual	676553-000
Stylus	Elo Part Number
IntelliTouch stylus	395699-000
AccuTouch stylus	442187-000
IntelliTouch armored stylus	853831-000

Users should independently evaluate the suitability of the product for their application.

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Elo TouchTools MonitorMice



Elo's MonitorMice software provides a multi-user touch interface from one PC running Windows NT 4.0.

MonitorMice software

Elo TouchSystems' newest software breakthrough provides a multi-user touch interface from a multi-user operating system, Windows NT 4.0. system costs are significantly reduced for a range of markets and applications:

- Point-of-information kiosks
- Process control
- Financial applications
- Education and training
- Point-of-sale terminals

Using Elo's patented MonitorMice software and multiport video, you can spread one Windows desktop across two or more monitors and have a separate application running in a window on each monitor. The end result can be as many as 32 independent, touch-activated applications running simultaneously on one PC under Windows NT 4.0.

The new multi-user software is an extension to Elo's MonitorMouse line that allows a touchscreen to work like a mouse on each touchmonitor. Until now, each touchscreen has required its own PC.

Multiple-user mode

In this mode the screen responds to a simple touch as it would to a single mouse click. Simultaneous touches on multiple monitors are recognized and processed without perceptible delay. A single

PC running Windows on multiple displays can be used in many applications:

- Kiosk "clusters" at airports, trade shows, and cyber cafés, to allow several people to use the kiosk software at the same time.
- Factories, to operate and control manufacturing processes from multiple locations.
- Employment offices, to provide simultaneous job search capabilities from several stations.
- Fast food restaurants, to allow order-taking at multiple stations.

Single-user mode

Drag-and-drop, double-clicking, and pull-down menu functions can be activated by touch when MonitorMice software is operated in single-user mode. For example:

- A financial trader working with three or four monitors can touch an item on one screen, then touch a second screen to which the item should be moved. When the finger is lifted from the first screen, the object automatically moves to the second.
- In a doctor's office, a single computer can drive monitors located in different patient rooms. The doctor can pull up patient records, billing data, and medical histories from any of these locations. Until now, a computer with a network connection would have been required in each room.

Users should independently evaluate the suitability of the product for their application.

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Elo TouchTools MonitorMice

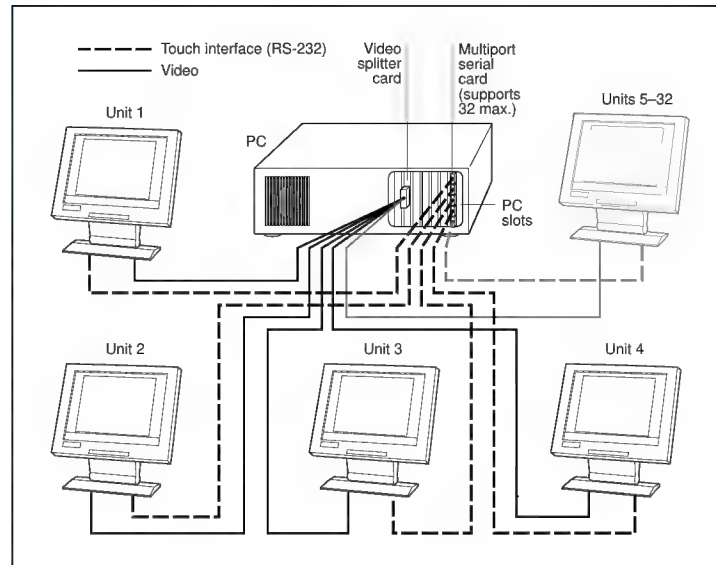


Figure 1. System configuration for MonitorMice software.

Features

- Interfaces with Windows NT serial.sys device driver using RS-232 serial communication.
- New control panel supports easy installation, calibration, and control at multiple touchmonitors. Control panel utilizes tab property pages for a simple user interface.
- Supports up to 32 monitors on one PC using third-party serial cards (Equinox Super Serial SST-8P or Control Rocketport-L6).
- Supports other multiport serial adapters.
- Offers re-architected 32-bit, threaded, Windows NT device driver.
- Provides new, easy-to-set, drag-delay parameter for better interaction with Web browsers.

Operating system support

Elo MonitorMice software is available for Windows NT 4.0. The software is compatible with any Elo touchscreen and can run on a mix of Elo products concurrently, such as an IntelliTouch CRT touchmonitor and an AccuTouch LCD touchmonitor of different sizes.

How it works

3rd party multi-port video options duplicate or divide the Windows desktop across the individual displays. The MonitorMice software takes touch input from each display and applies it to the correct section of the desktop. Application instance windows can then be set in each display to interact as separate applications, each on its own touch display (see Figure 1).

MonitorMice software can support up to 32 separate devices interacting with different application instances, providing, for example, up to 32 POS terminals on one NT PC.

Application considerations

- VGA extenders may be required if the monitors are more than 30 feet apart.
- A multiport serial card may be required.
- You may use multiple instances of the same application, or different applications altogether (such as training and manager programs).
- The application must position each instance window in the appropriate section of the virtual display.
- Only one sound card may be used.
- Contact Elo for specific application software requirements.

Users should independently evaluate the suitability of the product for their application.

Custom Solutions



Elo TouchSystems provides a broad line of integrated LCD and CRT touchmonitors to meet today's increasing demand for a variety of form factors for touch input capability. However, there are occasions when a customer requirement falls out of Elo's standard product range. Elo's Custom Solutions Program is designed to respond to unique needs for specially designed, low-production-volume touchmonitors. Here you will find information on National Integration Services (NIS)—an Elo Custom Solutions Partner.

NIS Capabilities

Customer-specific products. NIS focuses on a customer's specific product needs. They use their many years of experience producing custom products to provide a quick turnaround time to satisfy a customer's unique requirements.

Rapid in-house prototyping. NIS has an in-house mechanical design and prototyping staff. NIS can rapidly design and build prototypes, "proof-of-concept" models, and even short-run production parts within days of beginning a project.

Touchscreen expertise. NIS has an in-house electronic engineering staff with a broad-based knowledge of electronic design, systems, and most importantly, touchscreen technology. President Jim Odorczyk and General Manager Bill Yates have each been working with touchscreens for nearly 20 years.

Compliance engineering staff. NIS has an in-house compliance engineering staff that is knowledgeable in all compliance issues. NIS has successfully acquired approvals from all of the major organizations (UL, CSA, cUL, FCC A & B, CE, VDE, TÜV, CISPR A & B) and for nearly all of the applicable IEC standards for touchmonitors.

Unique production requests. NIS commonly paints monitors, applies static dissipative coatings, adds custom logos, and fulfills many other custom monitor assembly requests. NIS can build most any touchmonitor, fitting virtually all custom touchmonitor applications.

National Integration Services (NIS), based in Rochester, New York, is a premier custom touchmonitor manufacturer. NIS integrates Elo touch components into customer-specified touchmonitor solutions. This is just a small sample of the many NIS capabilities.

Warranty

Except as otherwise stated herein or in an order acknowledgment delivered to Buyer, Seller warrants to Buyer that Product shall be free of defects in materials and workmanship. See relevant specification sheet for touchmonitors.

Seller makes no warranty regarding the model life of monitors. Seller's suppliers may at any time and from time to time make changes in the monitors delivered as Products or components.

Buyer shall notify Seller in writing promptly (and in no case later than thirty (30) days after discovery) of the failure of any Product to conform to the warranty set forth above; shall describe in commercially reasonable detail in such notice the symptoms associated with such failure; and shall provide to Seller the opportunity to inspect such Products as installed, if possible. The notice must be received by Seller during the Warranty Period for such product, unless otherwise directed in writing by the Seller. Within thirty (30) days after submitting such notice, Buyer shall package the allegedly defective Product in its original shipping carton(s) or a functional equivalent and shall ship to Seller at Buyer's expense and risk.

Within a reasonable time after receipt of the allegedly defective Product and verification by Seller that the Product fails to meet the warranty set forth above, Seller shall correct such failure by, at Seller's options, either (i) modifying or repairing the Product or (ii) replacing the Product. Such modification, repair, or replacement and the return shipment of the Product with minimum insurance to Buyer shall be at Seller's expense. Buyer shall bear the risk of loss or damage in transit, and may insure the Product. Buyer shall reimburse Seller for transportation cost incurred for Product returned but not found by Seller to be defective. Modification or repair, of Products may, at Seller's option, take place either at Seller's facilities or at Buyer's premises. If Seller is unable to modify, repair, or replace a Product to conform to the warranty set forth above, then Seller shall, at Seller's option, either refund to Buyer or credit to Buyer's account the purchase price of the Product less depreciation calculated on a straight-line basis over Seller's stated Warranty Period.

THESE REMEDIES SHALL BE THE BUYER'S EXCLUSIVE REMEDIES FOR BREACH OF WARRANTY. EXCEPT FOR THE EXPRESS WARRANTY SET FORTH ABOVE, SELLER GRANTS NO OTHER WARRANTIES, EXPRESS OR IMPLIED BY STATUTE OR OTHERWISE, REGARDING THE PRODUCTS, THEIR FITNESS FOR ANY PURPOSE, THEIR QUALITY, THEIR MERCHANTABILITY, THEIR NONINFRINGEMENT, OR OTHERWISE. NO EMPLOYEE OF SELLER OR ANY OTHER PARTY IS AUTHORIZED TO MAKE ANY WARRANTY FOR THE GOODS OTHER THAN THE WARRANTY SET FORTH HEREIN. SELLER'S LIABILITY UNDER THE WARRANTY SHALL BE LIMITED TO A REFUND OF THE PURCHASE PRICE OF THE PRODUCT. IN NO EVENT SHALL SELLER BE LIABLE FOR THE COST OF PROCUREMENT OR INSTALLATION OF SUBSTITUTE GOODS BY BUYER OR FOR ANY SPECIAL, CONSEQUENTIAL, INDIRECT, OR INCIDENTAL DAMAGES.

Buyer assumes the risk and agrees to indemnify Seller against and hold Seller harmless from all liability relating to (i) assessing the suitability for Buyer's intended use of the Products and of any system design or drawing and (ii) determining the compliance of Buyer's use of the Products with applicable laws, regulations, codes, and standards. Buyer retains and accepts full responsibility for all warranty and other claims relating to or arising from Buyer's products, which include or incorporate Products or components manufactured or supplied by Seller. Buyer is solely responsible for any and all representations and warranties regarding the Products made or authorized by Buyer. Buyer will indemnify Seller and hold Seller harmless from any liability, claims, loss, cost, or expenses (including reasonable attorney's fees) attributable to Buyer's products or representations or warranties concerning same.

Users should independently evaluate the suitability of the product for their application.

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Glossary

Actual Image Size

The size of the display on the screen is dependent upon the signals provided by the video card. The displayable diagonal measurement can vary, depending on how the graphics mode is generated and how the monitor responds to the characteristics of the video signal.

Aperture Grille

Aperture grille technology employs a series of thin, closely spaced vertical wires to isolate pixels horizontally. The pixels are separated vertically by the nature of the scan lines (beams) used to compose the image.

Bandwidth

A measure of the display performance of a monitor. Expressed in MHz, bandwidth is the number of dots that can be displayed in a line per second. More strictly, it is the frequency response of the system between points where the signal level falls to a specified percentage of its maximum value (usually 50% or 75%). In principle, the greater the bandwidth, the better the monitor, although the quality of the picture tube is often the limiting factor affecting display performance and for many standard monitors there is little point in increasing the bandwidth beyond a certain point. Typical bandwidths for current monitors are as follows:

VGA monitors: 18 MHz
FGA+ monitors: 35 MHz
CAD monitors: 100 MHz

Brightness

Light output measured at the faceplate of the CRT; typically measured in footlamberts (fL). A minimum brightness level of 20 fL when viewing a full-sized page is considered acceptable.

Contrast

Contrast is the ratio between the maximum and the minimum brightness of the display.

Contrast Control

A manual gain control for a monitor affecting both luminance and contrast.

CRT

Cathode ray tube— also known as picture tube or screen. A picture tube in a TV is also a CRT.

DDC

Display Data Channel. A VESA standard for communication between a monitor and a video adapter. Using DDC, a monitor can inform the video card about its properties, such as maximum resolution and color depth. The video card can then use this information to ensure that the user is presented with valid options for configuring the display.

DDC2B

VESA standard bidirectional digital data channel between the display and the host. The host initiates data transfer by reading the EDID from a memory location in the display. *See also* **DDC** and **EDID**.

Digital Control

Microprocessor-based digital control of picture parameters and video modes for complete control of picture settings and modes and instant recall of all settings at the push of a button. This is a very advanced feature that allows the user to switch to any required mode at any instant without having to spend time readjusting the picture.

Dot Pitch

Dot pitch is the distance between one phosphor dot (i.e. red, green, or blue) and the nearest phosphor dot of the same color in the line above or below.

DPMS

Display Power Management Signaling standard. VESA standard that ensures that monitor and video card manufacturers produce power-saving products that work together.

EDID

Extended Display Identification Data, a VESA standard. Data structures containing the display identity and the basic display specifications.

Electronic Radiation Standards

International standards established to limit electromagnetic emissions from monitors. There are currently two important standards, both derived from regulations originally laid down by the Swedish authorities. *See also* **MPRII** and **TCO**.

Energy Star

ENERGY STAR is a voluntary partnership between the U.S. Department of Energy, the U.S. Environmental Protection Agency, product manufacturers, local utilities, and retailers. ENERGY STAR labeled products use less energy than other products. Partners help promote efficient products by labeling with the ENERGY STAR logo and educating consumers about the benefits of energy efficiency.

Flat Square Screen

A screen that is flatter and squarer than the conventional CRT screen. The flatter outline reduces picture distortion, reduces ambient reflections, and allows better use to be made of the screen area.

Flicker

Condition of the display caused by the mismatch of vertical and horizontal refresh rates, when a phosphor's illumination begins to decay prior to being refreshed. The result is a "flickering" particularly detectable via peripheral vision. Flicker can be eliminated by increasing the refresh rate to a value at or above 70 Hz.

Hertz

The unit of frequency named after the physicist Heinrich Hertz (1857-1894). 1 hertz (Hz) is equal to 1 cycle/second.

Glossary

Horizontal Frequency

Time it takes to scan each of the horizontal lines that make up the display; measured in kilohertz (kHz). Horizontal frequency is directly related to the vertical refresh rate, so that the greater the number of vertical lines, the higher the horizontal frequency required.

Horizontal Scanning Frequency

The number of video lines written on the screen every second (from left to right); also called line frequency and expressed in kHz. The higher the horizontal scanning frequency, the better the monitor (i.e., the higher the resolution and/or the higher the refresh rate).

I²C Bus: Access Bus Standard

A standard-protocol 2-wire (clock and data) serial data bus.

Interlaced Scanning Mode

A scheme that takes two passes to paint an on-screen image, painting every other line on the first pass and sequentially filling in the rest of the line on the second pass. This scheme usually causes flicker.

Invar Shadow Mask

A special type of shadow mask, made out of Invar and alloy, that is able to withstand the high temperature generated by the electron beam. The Invar shadow mask allows the CRT to generate a brighter image than the conventional shadow mask. An advanced Invar shadow mask improves brightness by 40 percent over the standard.

ISO 9241 part 3

ISO 9241 is an ergonomic standard that covers hardware, software, workplace, and environment. It addresses the actual application at the work place. The objective of part 3 is to ensure that the CRT display shall be legible, readable, and comfortable in use.

Linearity

The degree to which the actual location of a pixel on the screen corresponds with its intended location. Nonlinearity causes screen images to be more distorted in one area of the screen than in another. This is sometimes caused by poor voltage regulation in the monitor's electronics.

Magnetic Field Effects

A monitor is affected by magnetic fields. When a screen develops wrong colors in certain areas, or the picture becomes distorted, check what is located near the monitor. A monitor positioned near a steel cabinet, desk, bench, or steel girder imbedded in a wall or ceiling could distort a picture tube's electron beams due to an impeding magnetic field. Moving the monitor approximately 3 feet away from the suspected source can clear the problem, as can degaussing it. Speakers may also create a magnetic field when they are powered on, and should be considered as a possible source of distortion.

MPR II

The Swedish National Board for Measurement and Testing (SWEDAC) requires that products sold in Sweden comply with a set of safety standards known as MPR II, which covers the levels of magnetic and electrical fields in both VLF and ELF ranges. It is worth noting that there are no scientific studies that conclude that measurements above MPR II levels are hazardous. To measure emissions, a sophisticated test that screens out background radiation must be in place. Since distance to the CRT and orientation of the measuring device affects measurement, precise placement of the measuring device is essential and difficult to repeat. In addition, the actual image displayed can have an impact on emissions so that a given set of measurements may not predict the emissions a user would actually encounter.

Non-Interlaced Scanning Mode

A scheme for painting an on-screen image that paints all the lines in one pass and then paints an entirely new frame. A non-interlaced scanning mode reduces flicker.

Phosphor

Chemical compound that emits light when excited by electrons.

Pixel

Abbreviation for picture element, the smallest element of the picture that can be displayed on the screen. Each pixel contains one red, one blue, and one green phosphor.

Refresh Rate

Number of times the screen can be redrawn per second— an ergonomic issue directly related to long-term ease of use. A higher refresh rate means a less “flickering” display, resulting in less eyestrain and fatigue. Bandwidth, horizontal scanning rate, and vertical scanning rate work together to determine both the resolution and refresh rate.

Resolution

The number of pixels that can be displayed on a screen, specified as the number of pixels in a line multiplied by the number of horizontal lines. For example, a resolution of 800 x 600 is 800 pixels running horizontally and 600 pixels running vertically, making a total of 480,000 pixels.

RS-232 Port

A standardized serial port for connecting a computer to peripheral equipment, such as a printer, mouse, scanner, modem, or touchscreen.

Glossary

Screen Size vs. Viewable Image Size

Screen size is the total size, measured diagonally, of the monitor screen before it is placed in the monitor cabinet. Viewable image size is the size, measured diagonally, of the monitor screen that can be viewed once it is in the cabinet.

Stripe Pitch

The equivalent of dot pitch on aperture grille tubes— the distance between one stripe and the next one of the same color, expressed in millimeters.

TCO

In 1991, the Swedish Tjänstemännens Central Organization (TCO) set a standard even more stringent than MPR II, especially for alternating electric fields (AEF). Not only are the permitted field levels reduced compared with MPR II, but the measuring distance is reduced as well.

Tilt

Tilt is the angle of the CRT with respect to the horizontal-mounting bracket of the chassis. Tilt can vary, depending on the monitor's orientation to the earth's magnetic poles. Monitor manufacturers orient and align their products in the eastern direction. When the monitor is facing a north/south direction, there may be a slight rotation of the image.

USB

Universal Serial Bus, a new external bus standard that supports data transfer rates of 12 Mbps (12 million bits per second). A single USB port can be used to connect up to 127 peripheral devices, such as mice, modems, and keyboards. USB also supports Plug-and Play installation.

Vertical Frequency

Vertical frequency indicates how many times per second the monitor can draw all the lines on an entire screen. A higher vertical frequency or refresh rate will reduce flicker.

Vertical Scanning Frequency

Expressed in Hz, interlaced mode, this is the number of fields written to the screen every second. In non-interlaced mode it is the number of frames (complete pictures) written to the screen every second (also known as refresh rate). A higher vertical frequency or refresh rate will reduce flicker.

VESA

Video Electronic Standards Association, a consortium of manufacturers formed to establish and maintain industry-wide standards for video cards and monitors. VESA was instrumental in the introduction of the Super VGA and Extended VGA video graphics standards with a refresh rate of 70 Hz, minimizing flicker and helping to reduce operator fatigue and stress. *See also* **VideoGraphics Adapters**.

Video Bandwidth

See **Bandwidth**.

Video Graphics Adapters

A card with character generator and an array of microprocessors that translate bit information from the computer into displayable video signals for the monitor. These cards comply with various standards that determine the nature of the quality of the display.

VGA (Video Graphics Array), introduced in 1987, was the first analog card. It offered still higher resolution than EGA: 640 x 480 pixels for graphics and 720 x 400 pixels for text, and a color palette of 256 colors. VGA could also emulate EGA and CGA.

Super VGA (SVGA), devised by VESA in 1989, offers a resolution of 800 x 600 pixels.

XGA-8514A, introduced by IBM in 1990, offers a resolution of 1024 x 768 pixels (interlaced) and a color palette of 256 colors.

Extended VGA (XVGA), introduced by VESA in 1991, offers a top resolution of 1024 x 768 pixels (non-interlaced) and a refresh rate significantly higher than IBM's XGA-8514A.

High-end, graphics adapters, introduced over the last three years for professional workstations, offer top resolutions from 1280 x 1024 to 1600 x 1280 horizontal line frequencies up to 90 kHz and bandwidths up to 200 MHz.

Video Signal

The output from the video graphics adapter incorporating the red [R], green [G], and blue [B] signals and the luminance signal, or combinations of these signals, that pass to the video input of the monitor.

Viewable Image Size (VIS)

Actual maximum viewable image size is dependent upon the size of the plastic or bezel around the CRT. Typically, the maximum possible for a "17-inch" monitor is actually 15.75 inches, plus or minus 0.25 inch at the ends of diagonal measurement. VIS differs from diagonal linear measurement.

VRAM/Video Memory

Random access memory for storing the video information. VRAM is a special purpose RAM with two data paths for access rather than the one path of a conventional RAM. The two paths let the VRAM handle two tasks simultaneously: display refresh and process access. VRAM does not force the system to wait for one function to finish before starting another so it permits faster operation for the video subsystem.

Ten Tips for Effective Touchscreen Applications

Ten simple pointers that can make your touch-enabled application a success.

1. **Run your application full screen.** Remove title bars and menu bars so your application can take full advantage of the entire display area.
2. **Use bright background colors (not black).** Bright backgrounds in your application will hide fingerprints and reduce glare. Dithering or other patterned backgrounds (for example, the “crumpled paper look”) help the eye focus on the screen image instead of reflections, even in areas where there are no icons or menu choices.
3. **Use a simple point-and-click interface with large buttons.** Dragging, double-clicks, scroll bars, drop-down menus, multiple windows, or other elements can confuse the typical user and detract from user-friendliness and efficiency.
4. **Turn the cursor off so your user will focus on the entire screen instead of the arrow.** A cursor on the screen makes the user think, “How do I get the arrow to do what I want?” Remove the cursor, and the user’s thinking and actions become direct instead of indirect— thereby unlocking the true power of touchscreens.
5. **Always give your users feedback as soon as they touch the screen.** Immediate feedback is critical to reassure the user that a touch has registered. Responses can be visual, such as 3-D button effects similar to those found on a standard Windows button. Or you can provide an audio response, such as a “click” or other sound output whenever a user touches the screen.
6. **Make your application fun and fast.** Users will walk away from a sluggish system. You can keep their attention with a quick response to touches. Speedy systems also reduce vandalism. Graphics modes offering excessive colors or high resolution only slow down your system.
7. **Make the application intuitive, limit choices, and guide the user as much as possible.** Test your application on focus groups. If users pause in confusion— even for a moment— you’ve identified the areas that need improvement.
8. **Digitized speech (via a sound card) can talk users through your application.** Because the human brain can simultaneously process voice while absorbing an image, there is something almost magical about a user interface that provides voice prompts and touch response. The better kiosk applications exploit this knowledge for maximum effect. For example: “Touch the first letter of the company you are looking for.” Click. “Now touch OK.” Click...
9. **Make your application part of an attractive package.** Animation and large fonts help attract users to kiosk applications. The actual design of the kiosk cabinet should also be attractive and sturdy.
10. **Keep the following in mind when designing a kiosk cabinet.** Are you using forced-air ventilation? Put your fan at the top, near the monitor’s vents. To minimize the airborne dust from footsteps, keep the intake away from the floor. Keep air from entering around the monitor’s face. Point your speakers in the direction of your user’s ears. Use an Elo kiosk touchmonitor. Otherwise, allow for variations in the physical dimensions of monitor models because they change frequently. Finally, choose a finish that does not show fingerprints— avoid polished stainless steel, chrome, or glossy black paint.

Users should independently evaluate the suitability of the product for their application.

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Elo Kiosk Partners provide a full range of kiosk solutions integrated with Elo touchmonitors. We partner with the best full-service kiosk manufacturers to provide you with all facets of a kiosk launch—from design and manufacturing all the way through to installation and support.



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TouchReady Software Partners

Elo TouchReady Software Partners unite Elo technology with the world's leading touch software application developers to complement Elo's comprehensive array of touch-based hardware solutions available worldwide.



Elo TouchReady Software Partners include:

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Getting in Touch with Elo

To find out more about Elo's extensive range of touch solutions, visit our Web site at www.elotouch.com or simply call the office nearest you:

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